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the same work, and but little qualification except his individual industry, intelligence and ingenuity. Apprehending the value of aperture as a means of resolution, far in advance of the rest of the world he produced objectives that were not only unequaled, but for a time quite unintelligible. The position so suddenly acquired was worthily occupied; and for nearly half a century Mr. Spencer has maintained a place, by his extraordinary genius for original contrivance and his tact in accomplishing extremely fine work, among the first of the manufacturing opticians in the world. His life was spent at Canastota, N. Y., except the last few years, which were spent at Geneva. From his shop at Canastota he sent out Mr. Tolles, who has since divided the honors with his instructor as a maker of extremely fine and really original microscopical work; and during recent years, as superintendent of the Geneva optical works, while feeble from age and failing health, he has proved so good an organizer and instructor, that his sons have been enabled to produce lenses that would not suffer by comparison with the best work of their father. Among the first and oldest of the original circle of microscopists in this country, and not more skillful as an optician than genial and friendly as a man, he will be greatly missed by his friends, and remembered and honored by all who are interested in his branch of science.

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SCIENTIFIC NEWS.

— The results obtained in the recent deep sea explorations by the Coast Survey steamer *Blake* are of special interest as affording new data for mapping down the floor of the Atlantic. Since May last the *Blake*, under command of Commander Bartlett, reports having run lines of soundings across the Gulf stream from the Florida straits to Cape Hatteras, at the same time making an examination of the great ocean current. The new data obtained show that the Bahama Banks extend in an almost level submarine plateau nearly two hundred miles in width off the Carolinas, and drawing to a point off Cape Hatteras only twenty-five miles off shore, where the depth of water increases to about two thousand fathoms. This revelation of the orography of the Atlantic bottom off our Southern coast is of no little significance. The average depth of water on this long plateau was found by the *Blake* to be but little over four hundred fathoms, and it seems evident, therefore, that it must serve as a vast submarine wall to divert from the Carolina coasts the major part of the glacial undercurrent setting from the Newfoundland Banks to the southwestward. A part of this arctic current, as it moves far beneath the surface, on reaching Cape Hatteras no doubt finds its way between the shore and the prolonged Bahama Bank, even to the Florida coast, but only a small part. The effect of this submarine elevation running almost up to Hatteras, it would seem, is virtually to extend the Gulf stream basin of superheated water up to the North Carolina coast, thus giving the stream much more time after leaving the Florida pass to hold its equatorial temperature unreduced by free commixture with polar water. The Gulf stream is, as Lieutenant Maury said, "the carotid artery of the Atlantic ocean; the great current which connects in their circulation the waters of the arctic seas with the torrid zone," and every investigation which enables the hydrologist more accurately to gauge its thermal power is important.

If the view we have here taken, suggested by the preliminary report of the *Blake's* recent work, is sustained, the agency of the Arctic stream in cooling down the Gulf stream south of Hatteras, which figures as a very considerable factor in Dr. Carpenter's computations of Gulf stream heat, must be regarded as much feebler than it is generally supposed. It is to be hoped that when the details of the late exploration are reduced the results will be fully published. Surveys of this kind are of great value to navigation and science, but they ought to include each summer exact determinations of the temperature of certain sections of the Gulf stream. If we could ascertain every season the temperature, both surface and sub-surface, of this great oceanic artery at fixed points, it would be easy to deduce therefrom the great anomalous changes in the temperature and resultant weather of the northern hemisphere, as General Sabine years ago proposed to do, and thus be in position to forecast the general features of approaching seasons.—*New York Herald.*

— The following process is recommended by Abbass for producing metallic castings of flowers, leaves, insects, etc.:

The object, a dead beetle, for example, is first arranged in a natural position, and the feet are connected with an oval rim of wax. It is then fixed in the center of a paper or wooden box by means of pieces of fine wire, so that it is perfectly free, and thicker wires are run from the sides of the box to the object, which subsequently serve to form air channels in the mould by their removal. A wooden stick, tapering toward the bottom, is placed upon the back of the insect to produce a runner for casting. The box is then filled up with a paste of three parts of plaster of paris and one of brickdust, made up with a solution of alum and sal ammoniac. It is also well first to brush the object with this paste to prevent the formation of air bubbles. After the mould thus formed has set, the object is removed from the interior by first reducing it to ashes. It is therefore dried slowly, and finally heated gradually to a red heat, and then allowed to cool slowly to prevent the formation of flaws or cracks. The ashes are removed by pouring mercury into the cold mould and shaking it thoroughly before pouring it out, and repeating this operation several times. The thicker wires are then drawn out, and the mould needs simply to be thoroughly heated before it is filled with metal in order that the latter may flow into all portions of it. After it has become cold it is softened and carefully broken away from the casting.

— Capt. G. J. Belknap, of the U. S. steamer, *Alaska*, has been taking soundings in the Pacific ocean off Callao bay during a run of 112 miles. At a distance of 102 miles from the shore he found a depth of 3368 fathoms, of nearly four statute miles. That was the deepest depression he could find. The casts brought up clay and greenish sand, the bottom temperature being about 34° Fahr.

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PROCEEDINGS OF SCIENTIFIC SOCIETIES.

Boston Society of Natural History, Oct. 5.—A paper on the species of Orangs, by Mr. F. A. Lucas, was read, and Mr. Burgess described the true mouth structure of the "water-tiger" (Dytiscus).

Academy of Natural Sciences of Philadelphia, March 8, 1881.—Professor Angelo Heilprin delivered the introductory to his course of lectures on invertebrate palæontology. A paper entitled "Structure, affinities and species of Scolopendrella," by John A. Ryder, was presented for publication.

March 15.—Professor Henry Carvill Lewis delivered the introductory to his course of lectures on determinative mineralogy. Mr. Theo. D. Rand called attention to microscopic preparations of minerals. Professor Lewis spoke of a specimen of smoky quartz containing water. Professor Heilprin made some remarks on *Nummulites raymondiopsis* and *Opercularia rotilla*. Mr. Reuben Haines made a communication on impurities in drinking water and the modes of determining them. Remarks on the same subject were made by Messrs. McCook, Heilprin and Morris.

March 22.—Mr. J. A. Ryder gave some of the results of his investigations on the development of the oyster. Dr. G. H. Horn spoke of the larva of a beetle, *Goes perverulentes*.

April 5.—Professor Angelo Heilprin called attention to special characters in a specimen of Spirifer. Mr. J. A. Ryder made a statement with regard to certain disputed points in the organization of embryo fishes.

April 19.—Dr. Henry C. Chapman gave the results of his dissection of two hippopotami. Mr. Ryder spoke of the development of the nucleus in the ova of fishes and Mollusca. Mr. Tryon read extracts from a letter received from Mr. Hemphill relating to the habits of west coast limpets. Dr. G. A. König called attention to Reinsch's work on the micro-structure of Permian and Triassic coal. The subject was farther discussed by Professor Heilprin. A paper entitled "Observations on Planorbis," by R. E. C. Stearns, was presented for publication.